CEV.FR

EON® G2

GENERATION 2

# *EON10 G2 User Guide*

JBL PROFESSIONAL

Part Number: 981-00061-01

# About The EON10 G2

## Applications

- Live sound reinforcement, speech and vocals, music playback in entertainment, A/V, and institutional venues-especially when ease of use and portability are important factors.
- Amplification, mixing, and monitoring for electronic musical instruments.

## Features

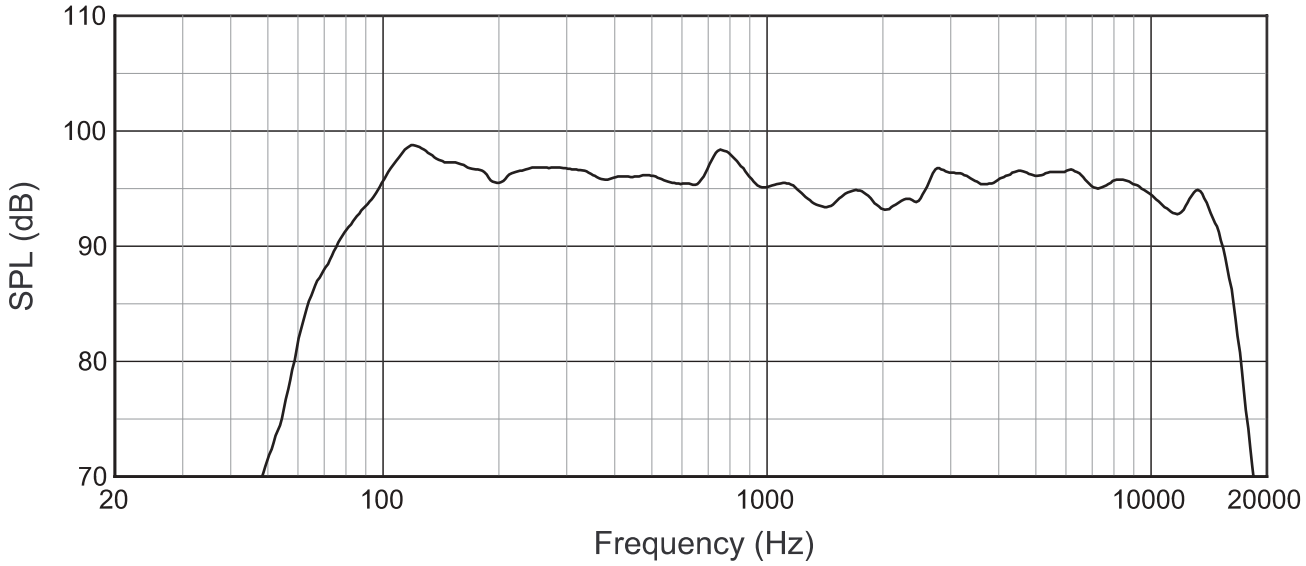
The second generation of one of the most successful and influential professional speaker systems ever.

- 10" Differential Drive® low-frequency driver with a neodymium magnet for low-distortion and light weight.
- 1" (throat diameter) JBL compression driver with titanium diaphragm and ferro-fluid cooling.
- Bi-amplified 125 watts low frequency and 50 watts high frequency - actual power delivered to the drivers.
- Built-in 3-input mixer. One balanced mic / line selectable input, one dual-channel TRS 1/4" phone line-level
- Balanced loop-through / mix output. "Daisy-chain" additional EON speakers or send the mixed output to a mixing console or auxiliary EON speaker.
- 90° x 60° (nominal) constant directivity horn.
- Thermomaster® Total Thermal Management System®. A single piece, cast-aluminum baffle integrates the woofer frame, horn, and amplifier heat sink. Air movement in the finned ports dissipates heat - no internal or external cooling fans are required.
- Rugged, lightweight, black co-polymer enclosure with an ergonomic molded in handle and cast aluminum baffle.
- Integral 35 mm pole mount receptacle with securing thumbscrew.
- Multi-angle enclosure for front of house or stage monitor application.

## Specifications

| | |
|---|---|
| Freq. Range (-10 dB): | 65 Hz - 18 kHz |
| Freq. Response (±3 dB): | 90 Hz - 16 kHz |
| Horiz. Coverage (-6 dB): | 90° nominal |
| Vert. Coverage (-6 dB): | 60° nominal |
| Rated Maximum SPL: | 117 dB, @ 1 m (3.3 ft) |
| Dimensions (H x W x D): | 493 mm x 356 mm x 307 mm (19.4 in x 14.0 in x 12.1 in.) |
| Net Weight: | 10.4 kg (23 lbs.) |
| LF Driver: | Integral frame with one 10" (254 mm) driver, dual neodymium magnet, 1.5" Differential-Drive® voice-coil. |
| HF Driver: | JBL2412 1" (throat diameter) compression driver with titanium diaphragm. Ferro-fluid cooled. |
| Amplifier Power LF: | 125 watts @ low-frequency driver impedance. |
| Amplifier Power HF: | 50 watts @ high-frequency driver impedance. |
| Input 1 Sensitivity: | -48 dBu to 0 dBu for rated output (Mic/Line switch in MIC position)<br>-6 dBu to +20 dBu for rated output (Mic/Line switch in LINE position) |
| Input 2 & 3 Sensitivity: | -12 dBu to +20 dBu for rated output |
| Output Level: | +26 dBu (peak), Loop/Mix switch in MIX position |
| Audio Connectors Input 1: | XLR/F, balanced |
| Audio Connectors Input 2 & 3: | Single TRS 1/4" Phone |
| Crossover Freq: | 2.7 kHz |
| Loop/Mix Out: | XLR/M, balanced. |
| AC Input: | 110 - 230 VAC, 50 - 60 Hz, 100 watts rating per UL, detachable IEC power cable |

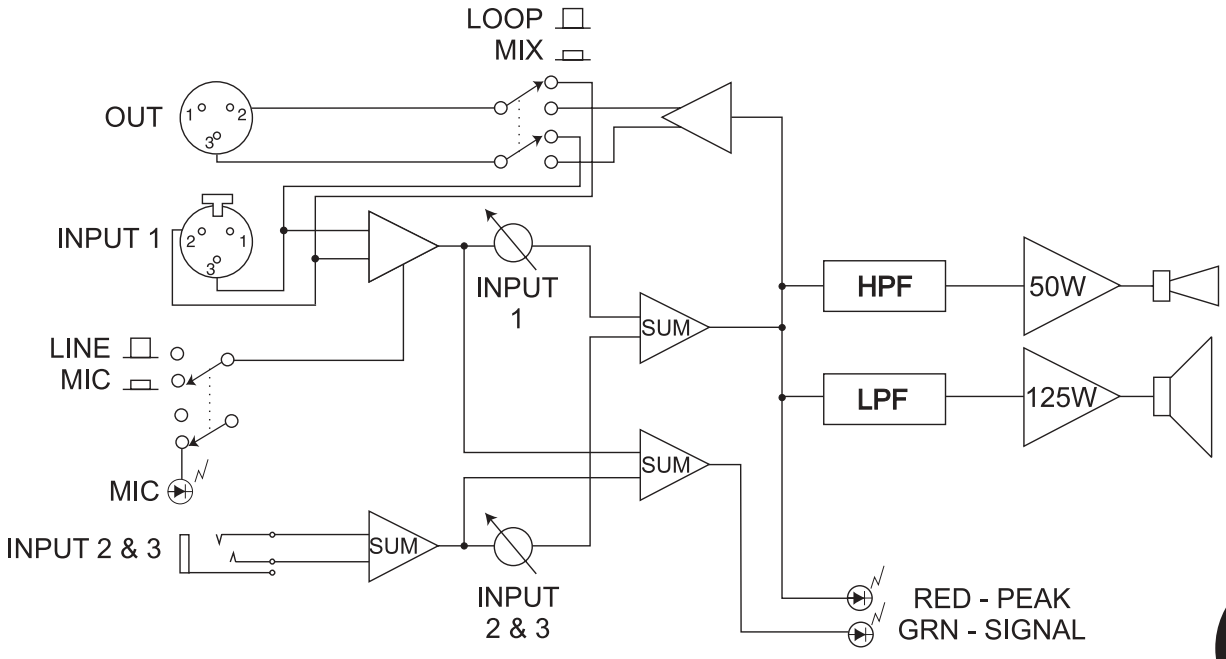
## Frequency Reponse




## Available Accessories

| | |
|---|---|
| SS2-BK | Tripod Stand |
| ESK10 | Suspension Kit for EON 10” models |
| BRK10 | Bracket, adapts EON 10” models to OmniMount® brackets |
| EON10 Bag-1 | Zippered, plushed-lined speaker bag for EON 10” models |

## Block Diagram

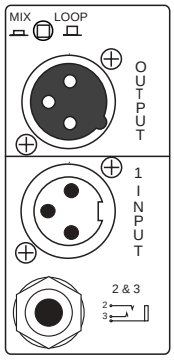


# Quick Start

1. Refer to the “Basic Sound Reinforcement System with Stage Monitors” diagram on page 12
2. Turn the INPUT 1 and INPUT 2 & 3 controls fully counter clockwise.
3. Set the MIC/LINE switch.
   - If a microphone will be connected directly to INPUT 1, set the MIC/LINE switch to the MIC position (depressed). The MIC LED will illuminate when power is turned on.
   - If a mixer, CD player, cassette tape, or electronic musical instrument (the “source”) will be connected directly to INPUT 1, set the MIC/LINE switch to the LINE position (disengaged). The MIC LED will not illuminate when power is turned on.
4. Plug the power cable into a properly grounded 3-wire AC power.
5. Plug the XLR cable from the mixer or microphone into the INPUT 1 connector.
6. Connect unbalanced sources (if used) to the INPUT 2 & 3 connector.
7. POWER UP PROCEDURE
   First, switch on the power to the mixer, audio sources, or musical instruments that are feeding your EON10 G2.
   - Next, turn on the power switch (the front panel power indicator will illuminate).
   - Reverse this process when shutting down your system. This will avoid disturbing thumps from the speaker as sources power on/off.
8. SET VOLUME
   - If you are using an audio-mixing console, refer to the manufacturer’s instructions to properly set gain structure (see the “Gain Structure” section on page 16).
   - Turn up your sources to the level that will be used in performance and talk, sing or play into the system.
   - Bring the INPUT 1 control up (clockwise) until the desired volume has been reached. If you are using a micphone, turn the INPUT 1 control up slowly to avoid feedback.
   - If you are using the INPUT 2 & 3 inputs, bring the INPUT 2 & 3 controls up to the desired volume.
9. CHECK THE PEAK LED - The PEAK indicator flashes when the loudspeaker’s on-board amplifiers are approaching maximum output. Occasional flashes are normal for very loud operation. However, if the PEAK LED stays illuminated, the sound will be distorted and it is an indication that more speakers or a lower performance volume may be required for your specific application.

## CONTROLS AND CONNECTIONS

The audio section of the EON10 G2 includes powerful features that enhance the flexibility of your speakers.



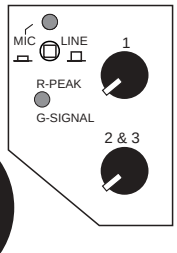

### *Controls*

INPUT 1

Adjusts the level of INPUT 1. Use this control to match the input sensitivity of the EON10 G2 to the output level of the mixer, microphone, or instrument connected to INPUT 1. It is a common misconception that this control changes the power of a system. Your EON10 G2 will produce its rated output power no matter where this control is set. The INPUT 1 control determines how much signal is required at the input in order to drive the system to full output.

INPUT 2 & 3

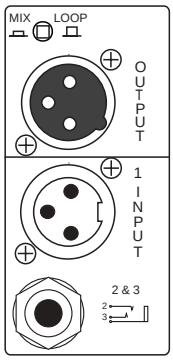
This control adjusts the level of the inputs connected to INPUT 2 & 3.



## *Connectors*

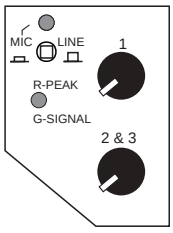
INPUT 1

This balanced input accepts a standard XLR (female) connector. A broad range of signals from microphones (-48 dBu to 0 dBu nominal), audio mixing consoles, and electronic musical instruments may be connected here. When using a single audio input to the speaker, this is the input to use. The sensitivity of this input is controlled by the MIC/LINE SWITCH and the INPUT 1 rotary control.




INPUT 2 & 3

This 1/4" jack can accommodate one or two channels of audio. When a two-channel source is connected by means of a TRS 1/4" plug, both channels are summed to mono. A single channel source may also be connected here with a standard 1/4" TS plug. This input is intended for use with audio devices including cassette tape, CD, MP3 players, computer sound-card outputs, electronic keyboards, and electric/acoustic musical instruments. The level of INPUTS 2 & 3 is controlled by the INPUT 2 & 3 rotary control. See the APPLICATION EXAMPLES and CABLES AND CONNECTORS sections of this guide for details on how this input may be used.




OUT

This XLR (male) output connector works with the MIX/LOOP SWITCH (see below) to provide a method of sending audio from your EON10 G2.

## *Switches*

MIC/LINE

The MIC/LINE switch effects only INPUT 1. It selects between two sensitivity ranges. This switch is used to match the input sensitivity of the EON10 G2 with the output level of the device connected to INPUT 1. Depressing the MIC/LINE switch selects MIC (most sensitive) and causes the MIC/LINE LED to illuminate.

*CAUTION: Before adjusting this switch, be certain to rotate the INPUT 1 control fully counter clockwise. After the MIC/LINE switch has been adjusted, slowly rotate the INPUT 1 control clockwise until the desired volume has been reached.*

- Use the MIC position (depressed) when a microphone is connected to INPUT 1.
- Use the LINE position (disengaged) when a line level source such as an audio mixing console, audio playback device, or electronic musical instrument is connected to INPUT 1.

MIX/LOOP

This switch selects the source of the signal for the OUT connector.

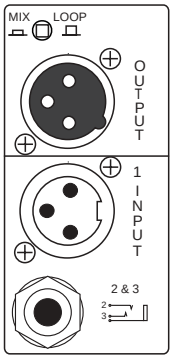
*CAUTION: Before adjusting this switch, be certain to set the input level control of any equipment connected to this output to its minimum gain (least sensitive) setting.*

- In the disengaged position, only the signal from the INPUT 1 connector is routed directly to the OUT connector. Changing the other settings on the audio panel will not effect the OUT signal. The INPUT 2 & 3 inputs will not be present at the OUT connector. Use this setting when you want to feed multiple EON powered speakers the same signal.
- In the MIX position (depressed), a blend of all inputs to the speaker (INPUT 1 and 2 & 3) will be sent to the OUT connector. Any changes to input level settings will affect the OUT signal. See the APPLICATION EXAMPLES section for details on how this mode may be used.

### *Indicators*

PEAK / SIGNAL

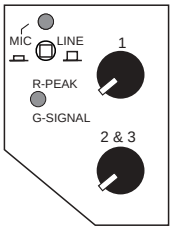
The PEAK / SIGNAL LED (Light Emitting Diode) is a two-color device. Red indicates that the system is approaching clipping. The threshold for this light is actually about 2 dB below clipping. An occasional flicker of the red LED on the loudest peaks is acceptable. If this LED remains red for more than the duration of brief dynamic peaks, the system is being overdriven. Continuously over driving the system will result in unpleasant and fatiguing distortion and may lead to premature failure of your speaker system.




If the red LED illuminates excessively:

- Reduce INPUT 1 and INPUT 2 & 3.
- Reduce the output level of the mixer, musical instrument, or other source to the speaker.

Green indicates a usable signal is present at INPUT 1 and/or INPUT 2 & 3.



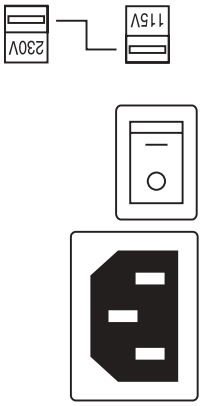

MIC

This LED illuminates to indicate that the MIC/LINE switch is in the MIC (depressed) position.

## VOLTAGE SELECTION AND FUSES

### *Changing Voltage*

Your EON10 G2 will typically be set at the factory to accommodate the power mains voltage in your area. Before you set up your EON10 G2 for the first time it is a good idea to verify that the setting of the selector is appropriate for the power in your area. Directly above the power switch you will see a seal that indicates the factory setting for the voltage. If the voltage indicated is correct for your area, go ahead and power up your EON10 G2.




In the event that you do need to change the voltage selection:

- Make sure that the AC is disconnected from the speaker.
- Directly above the power switch on the speaker is a voltage selector. Peel off the factory-applied seal.
- Set the voltage selector switch to the 115V or 230V setting as required for your area.
- After having reconfirmed that the correct voltage is selected, connect the AC (IEC connector) and power the unit up.

DO NOT UNDER ANY CIRCUMSTANCES OPERATE THE UNIT WITH THE WRONG VOLTAGE SELECTED. DOING SO MAY RESULT IN SERIOUS DAMAGE TO YOUR SPEAKER SYSTEM WHICH WILL NOT BE COVERED BY WARRANTY.

### *Fuse Replacement*

The EON10 G2 has no user-serviceable fuses. Failure of fuses is most frequently a symptom of problems requiring service by a competent technician.

# Application Examples

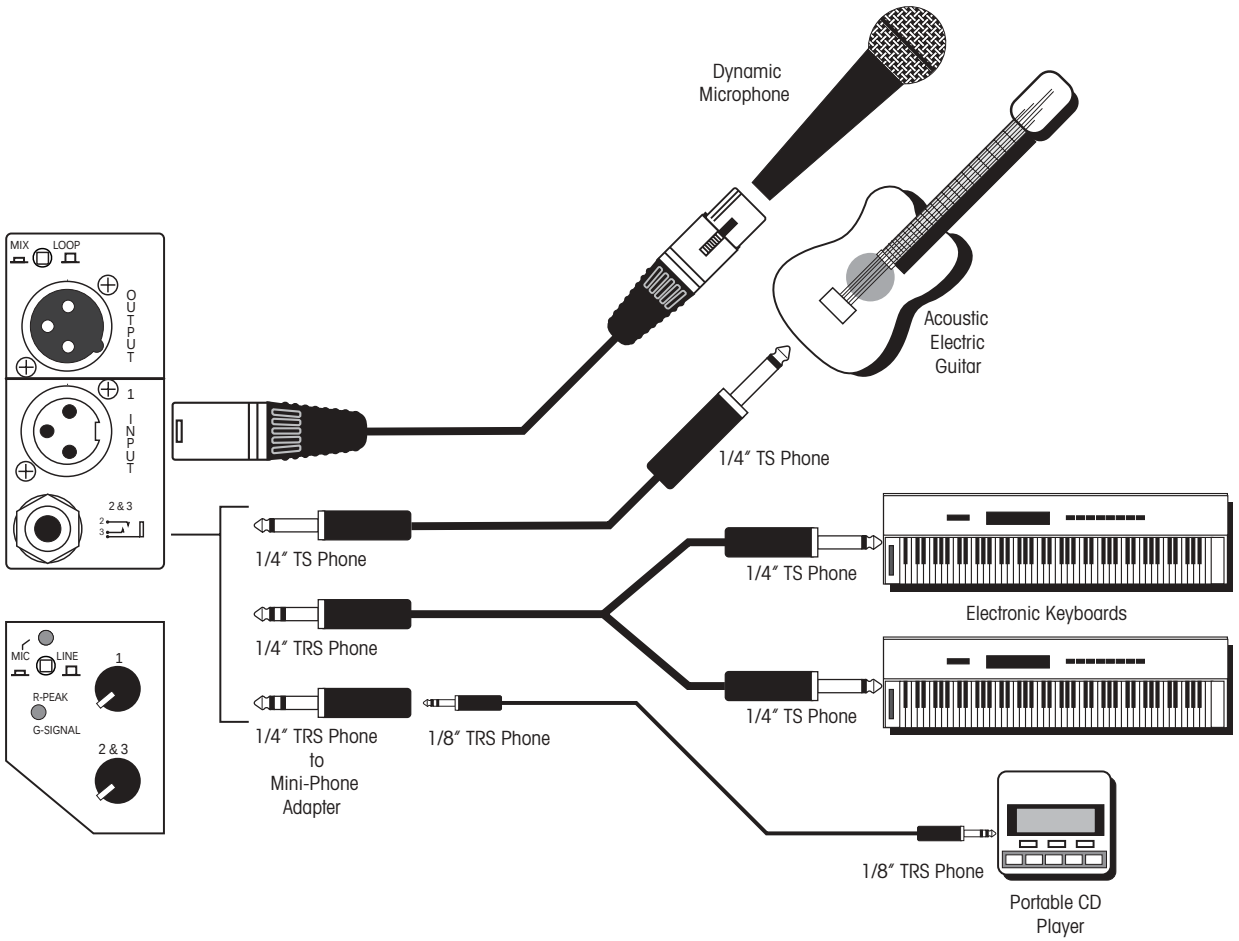
## One Piece PA System

In this basic PA setup a dynamic microphone is connected to INPUT 1. The MIC / LINE switch would be set to the MIC position (depressed). Several examples illustrating possible uses for INPUT 2 & 3 are shown.

Acoustic Electric Guitar - The mono or stereo output of an electrified acoustic guitar can be connected directly to INPUT 2 & 3. If a stereo instrument and cable are used, the left and right channels will be combined into mono.

Electronic Keyboards - A pair of electronic keyboards are connected to INPUT 2 & 3 via an adapter cable (see the section “Cables and Connectors”). Such a cable is available from pro-audio dealers and is commonly used as an “insert cable”.

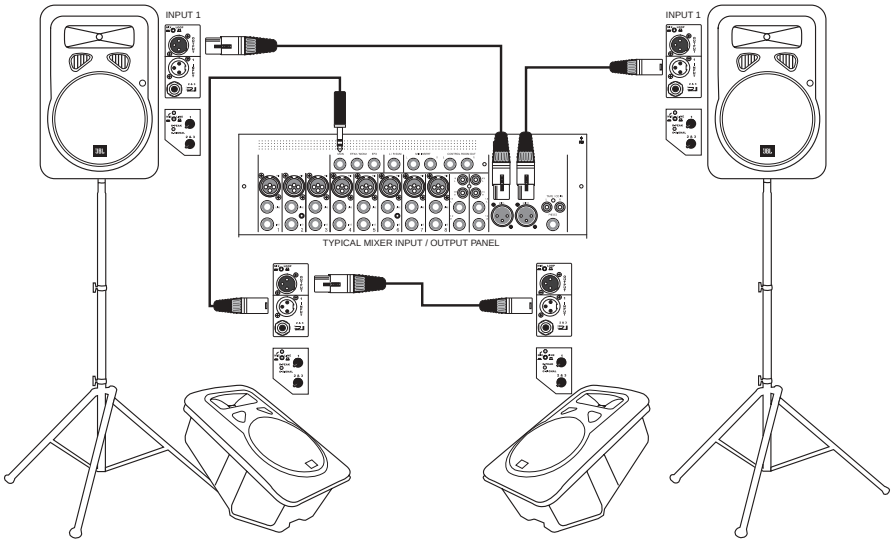
Portable CD Player - A portable CD player may be connected to the EON10 G2 by means of a 1/4” TRS to Mini-Phone adapter. Again, the left and right channels will be combined into mono.



## Basic Sound Reinforcement System With Stage Monitors

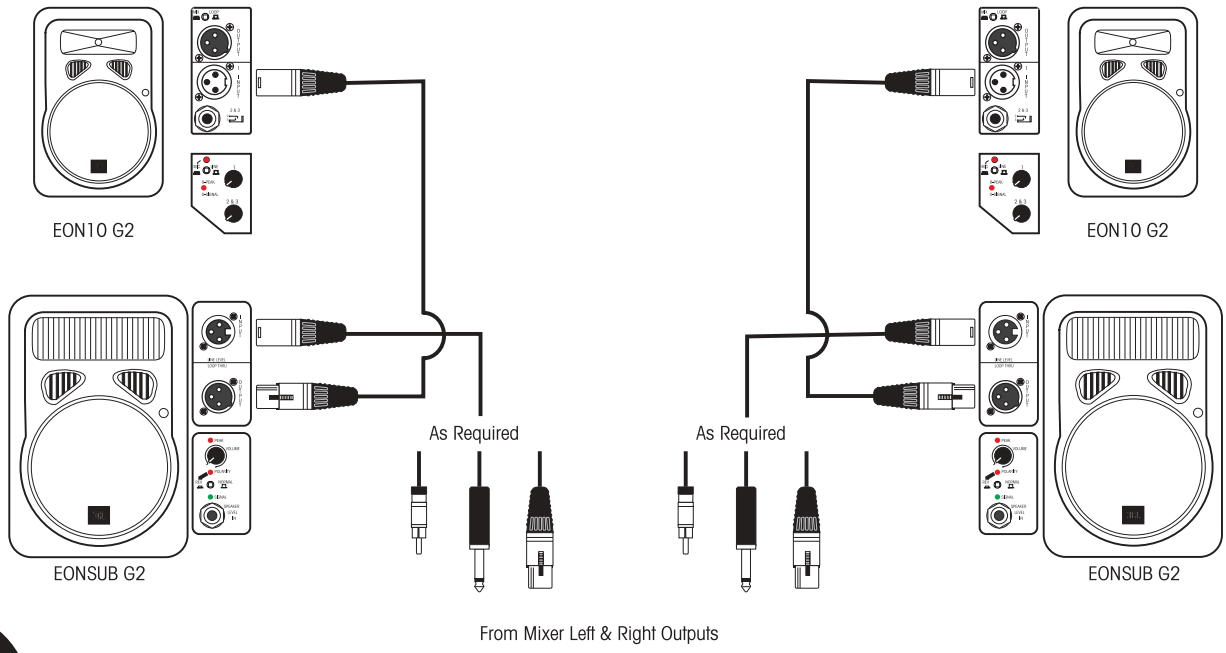
This is the basic live sound system. The optional tripod stands will get the speakers up above the audience so the sound can project. The second pair of EON10 G2 speakers are used as stage monitors. For maximum gain before feedback, position the monitors so that they do not point into microphones.

The output connectors on your mixer may differ from the illustration.




## DJ or Sound Reinforcement System with EONSUB G2

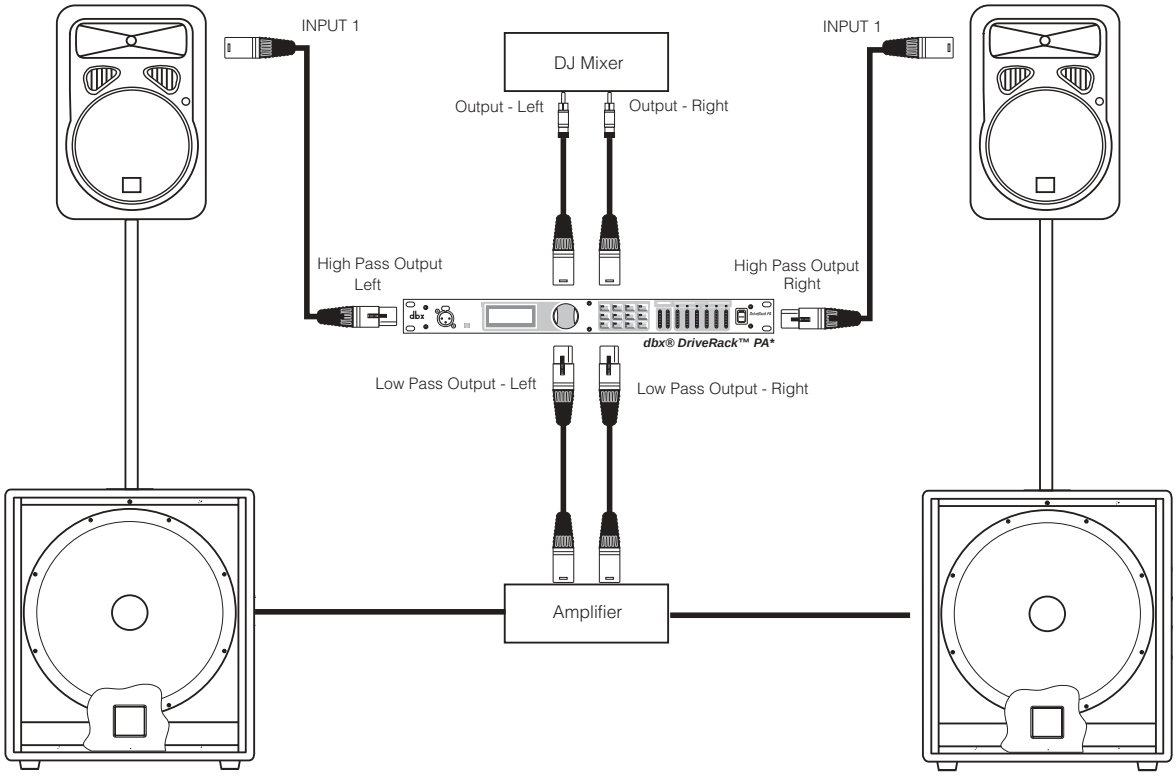
Here's a system with EONSUB G2 added to provide additional low-frequency power. If your mixer has a SUM or MONO output, you can also drive the EONSUB G2 from this output and use the SUM or MONO volume control for independent control of bass.



## DJ System with Passive Subwoofers

This system combines a pair of EON10 G2 powered speakers with externally powered subwoofers for extra power at very low frequencies.

* Recommended crossover frequency = 80-150 Hz. (season to taste)




# *Troubleshooting*

| Symptom | Likely Cause | What to do |
|---|---|---|
| No sound | Speaker not connected to active AC power. | Verify that speaker is connected and that the circuit is on. |
| | Power not switched on. | Switch on power and verify that power LED is on. |
| No sound, speaker is connected to working AC power but won't come on. | Speaker power cable is faulty or improperly connected. | Re-seat the power cable at both ends. Substitute a known-good power cable |
| | Blown fuse. | There are no user-serviceable fuses in the EON10 G2. Take your speaker to a competent servicer. |

# Troubleshooting

| Symptom | Likely Cause | What to do |
|---|---|---|
| No sound. Speaker comes on. SIGNAL LED does not illuminate. | Signal source (mixer, instrument, etc.) is not sending. | Check VU meters on the source mixer.<br>Verify that the tape or CD is playing.<br>Use headphones to verify that the instrument is actually sending an audio signal. |
| | Faulty cables and connections. | Disconnect and re-seat signal cables.<br>Replace suspected cable with a known-good cable. |
| No sound with microphone connected directly to the MIC / LINE 1 input. SIGNAL LED does not illuminate. | Microphone requires phantom power. | The EON10 G2 does not supply phantom power. Switch to a dynamic microphone, use a battery in the microphone (if possible), use an external phantom power supply. |
| Signal sounds distorted and very loud, PEAK light is lit most of the time. | Excessive input signal, exceeding the capabilities of the speakers. | Reduce the output level of the source.<br>Turn down the LEVEL controls on the speaker.<br>Use additional EON speakers. |
| Signal sounds distorted even at moderate volumes, PEAK light is not lit. | Mixer or other source is overdriven. | Review the Owner's Manual for your mixer and adjust controls as needed.<br>• Input sensitivity (gain)<br>• Channel faders<br>• Master faders<br>Once this is done, review the instructions in the Quick Start section of this guide. |
| Lots of hiss in the sound, the mixer controls are at very low settings. | Improper gain structure or noisy source device. | Make sure that the MIC/LINE switch is in the LINE (disengaged) position.<br>Reduce the LEVEL settings at the speaker.<br>Review the Owner's Manual for your mixer and adjust controls as needed. |
| Noise or hiss heard at output. | Noisy source device. | Disconnect the devices that are connected to your speaker one at a time. If the noise goes away, the problem is with the source or the connecting cable. |

| Symptom | Likely Cause | What to do |
|---|---|---|
| Hum or Buzz that increases or decreases when the mixer level controls are moved. | Improper A/C ground or faulty equipment connected to mixer input. | Disconnect or mute channels one at a time to isolate the problem. Refer to the Owner's Manual of the faulty equipment for troubleshooting help. |
| | Faulty cable between source equipment and mixer. | Substitute a known-good cable for the suspected faulty cable. |
| Hum or Buzz. | Improper A/C grounding, ground loops. | Connect all speakers to a common power circuit. "Telescope" the audio ground by using an XLR/F to XLR/M adapter with Pin 1 disconnected. Re-route audio cables away from AC power and lighting cables. |
| | Excessively long unbalanced cable run. | Use the balanced outputs (if available) of your mixer or source equipment to drive your EON speakers. Use a "DI" (direct injection) box to convert your unbalanced equipment output to a balanced output. |
| | Improper system gain structure. | Reduce the INPUT 1, LINE 2, and LINE 3 controls and increase the output level of your source devices. |
| The inputs from INPUT 2 & 3 aren't coming out of the OUT connector. | MIX/LOOP SWITCH set improperly. | Set the MIX/LOOP SWITCH to the MIX OUT position (depressed). See the CAUTION in the "Switches" section of this manual. |
| The speaker connected to the OUT connector goes up and down in volume when I adjust the INPUT 1 control on the 1st speaker. | MIX/LOOP SWITCH set improperly. | Disengage the MIX OUT switch. See the CAUTION in the "Switches" section of this manual. |
| Speakers feedback and howl when the microphone volume is turned up. | Microphones are pointed into the speakers. | Move the speakers so they do not point into the microphone's pick-up pattern. See the section on "Loudspeaker Placement and Mounting" on page 20. |
| | Equalizer settings are incorrect. | Locate the feedback frequency and reduce it using the mixer EQ or an external equalizer. |
| | Excessive gain. | Reduce the gain at the mixer and move the microphone closer to the sound source. |

## Gain Structure

Gain structure is the term we apply to adjusting the relative input sensitivity and output levels of components in an audio system. The objective of proper gain structure is to minimize noise on one extreme and to prevent clipping on the other. Proper gain structure will result in all components clipping at about the same time.

First, let's clear up one common misconception. The input control on an amplifier or powered speaker does not determine how much power it will produce. A 100 watt amplifier (for example) can produce 100 watts no matter where the input level control is set. The input level control simply determines how much input voltage is required to drive the amp to full output. If the input level controls of an EON10 G2 are set too low (rotated too far counter-clockwise) the mixer will go into clipping before the speakers are driven to full output. If the input level controls of an EON10 G2 are set too high (rotated too far clockwise) the system will be noisy. With that in mind, here's a procedure for setting up system gain structure that will get the best dynamic performance possible from your system.

Summary

- Adjust your mixer so that the loudest passages of your performance drive the mixer almost to its peak output.
- Set the MIC / LINE switch to the LINE position (unless a microphone is connected directly to the EON input). Slowly bring up the INPUT 1 level control of the EON10 G2 until the desired performance volume is reached. When used with a typical DJ or audio mixer, this will probably place the control around 10:00 o'clock.

Step by step instructions

1. Begin with all level controls on your mixer and EON10 G2 speakers at minimum. Note that the EON10 G2 has a switch that selects "Mic" or "Line" sensitivity. The "Mic" position should be used only when a microphone is connected directly to the input.
2. Bring the INPUT 1 level control on your EON10 G2s to approximately 9:00 o'clock. We'll come back and make some final adjustments here later on.
3. Bring the output of any electronic source (CD player, drum machine, electronic keyboard, etc.) to its "nominal" position. This will usually be marked. If it isn't, bring the control to about 2/3 of its maximum position. Make sure that any foot pedals or other volume controls are at the position they will be during the performance.
4. At your mixer, bring the "Input Attenuator" (sometimes called "Gain" or "Sensitivity") control up while playing the instrument or talking / singing into the microphone. Be sure that the level you're playing at is the same as the actual performance level will be. Watch the channel "Clip" or "Overload" or "Peak" indicator. It should just flicker on the very loudest dynamic peaks.
5. Now bring the channel fader up to its "nominal" position (see the mixer Owners Manual).
6. Slowly bring the mixer master faders up to their nominal position. At this point, you should hear sound from the EON10 G2s. If the level is too high, trim back the INPUT 1 control on the EON10 G2s.
7. Repeat steps 3 – 5 for all remaining channels.
8. Check the meters on the mixer output. If you're seeing peaks that drive the meters into clipping, trim back the channel faders and master faders slightly. Also be aware that actual performance levels tend to be higher than rehearsal and sound check levels so you may want to trim back the input sensitivity slightly.
9. If an outboard processor such as a graphic EQ is used, it should be set to "unity gain" (see the processor's Owners Manual). Unity gain means that the signal level on the output is the same as the level at the input.
10. Now bring up the input control of your EON10 G2 speakers until the desired performance volume is reached. If clipping occurs before the desired volume is reached you need more speakers or a lower performance volume.
11. Listen to your mix and adjust to taste.
12. At this point, the maximum output of the mixing console should be capable of driving your EON10 G2s to full out put and you will have the lowest noise operation that your equipment is capable of delivering.

## Connections - Balanced and Unbalanced

There are two basic types of audio system interconnections for very low to medium level audio signals: Balanced and unbalanced. Your EON10 G2 can accept either type of input.

Balanced Lines

In audio, a balanced line is a three-conductor system in which the two signal wires carry an equal, but opposite voltage with respect to the ground wire. The ground wire acts only as a shield and does not carry any audio signal current. Outside interference (such as RFI – Radio Frequency Interference) is either shielded from the internal signal conductor, or if it gets into the cable, is cancelled out by the opposite signals at the receiving end. Balanced connections are preferred for any longer cable runs.

Unbalanced Lines

Unbalanced cable is a two-wire system where the shield (ground wire) acts as one of the current carrying signal conductors. The center conductor enclosed by the shield is commonly known as the “hot” conductor. Unbalanced audio cables do not reject noise as well as balanced lines. Unbalanced lines are typical in home hi-fi type systems and on the outputs of electronic musical instruments. These work well if the distance between the components is short, the signal level is relatively high and all of the electronics used in the system are plugged into the same AC service.

Unbalanced Sources to EON Powered Loudspeakers

If you need to connect your EON speakers to an unbalanced source you have two options:

- Use the INPUT 2 and INPUT 3 connectors. These inputs are balanced but will accept unbalanced inputs without the need for any special adapters.
- Use an adapter or special cable (see the section “Cables and Connectors”).

## Loudspeaker Placement and Mounting

The following guidelines will help you achieve optimum sound wherever you use your EON loudspeakers:

Raise the speakers as high as possible. For best results try to get the high frequency horn at least 2 to 4 feet above the heads of the audience. If the speakers are too low, the people in the back of the audience will not receive the best quality of sound.

Place the speakers between the microphones and the audience. Feedback occurs when the microphones pick up sound from the speakers and “feed” the sound back through the sound system. If space is limited, point the speakers away from the microphones to reduce feedback.

Locate the speakers away from turntables. Low-frequency feedback occurs when the output of the speaker is picked up by the tone arm of the turntable and is re-amplified. A heavy, solid turntable base and shock mounting can also reduce this type of feedback in DJ applications.

Use more speakers in large or highly reverberant spaces. Spreading speakers throughout these spaces will produce much better sound than trying to compensate with loudness level or equalization. For very long distances, the use of another set of speakers on a delay is recommended.

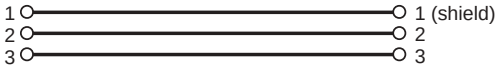
Stand speakers upright for PA - Tilt the speakers back for stage monitoring. Upright stance provides even coverage over a wide area. EON speakers are also designed with two slanted positions for stage monitoring applications.

# Cables and Connectors

| | |
|---|---|
| XLR/F to XLR/M Microphone Cable | • The standard cable for interconnection of microphone and line level signal in professional audio systems.<br>• Microphone to mixer<br>• Microphone to EON10 G2 INPUT 1<br>• Audio mixer to EON10 G2 INPUT 1<br>• "Daisy chaining" EON10 G2 speaker systems |
| TRS* (Balanced) 1/4" Phone to XLR/M | • For connecting balanced devices with 1/4" connector to the EON speaker |
| XLR input. TS (Unbalanced) 1/4" Phone XLR/M | • Connects devices such as electronic instruments and some mixers to an XLR input. This cable may be used to connect an unbalanced source to a balanced input but the connection will be unbalanced. |
| XLR/M to RCA (phono) cable | • Connects consumer audio products and some DJ mixer outputs to professional audio equipment inputs. |
| TS (Unbalanced) 1/4" Phone to RCA (phono) cable | • Connects outputs of consumer audioequipment to unbalanced line inputs of EON10 G2 and many mixers.<br>• Connects unbalanced line outputs of many mixers to the inputs of consumer audio recorder. |
| TRS 1/4" Phone to dual 1/4" Phone | • Splits a stereo output into separate left/right signals.<br>• Connects stereo electric guitar to two unbalanced audio inputs.<br>• Connects a headphone output to two unbalanced audio inputs.<br>• Change to a TRS mini-phone to connect to the output of portable CD players and computer sound cards to a mixer or powered speakers.<br>• Also used to connect signal processors to the "insert" of many mixing consoles. |
| TRS 1/8" Phone to dual 1/4" Phone | • Splits a stereo output from a portable audio device (CD, R-DAT, Mini-Disc, etc.) or computer sound card into separate left/right signals that can be fed to 1/4" inputs of professional audio equipment. |
| TRS 1/8" Phone to dual RCA | • Splits a stereo output from a portable audio device (CD, R-DAT, Mini-Disc, etc.) or computer sound card into separate left/right signals that can be fed into RCA inputs of audio equipment. |
| 1/4" Phone to RCA (phono) Adapter | • Used to connect outputs of consumer audio products to the unbalanced inputs of many pro-audio devices. |
| TRS 1/4" Phone to 1/8" Mini-Phone Adapter | • Used to connect headphones with Mini-Phone cables to 1/4" headphone jacks.<br>• Adapts the output of portable audio players and computers to INPUT 2 & 3 on the EON10 G2. |

*TRS = Tip Ring Sleeve indicating that the connector can conduct two audio channels (via the Tip and the Ring) and a ground (via the Sleeve). TRS connectors may be used for a single channel of balanced audio or two channels of unbalanced audio.

XLR/F to XLR/M Microphone Cable

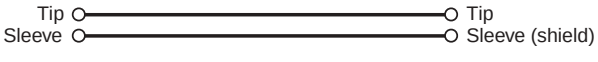



TRS (Balanced) 1/4Ó Phone to XLR/M Cable

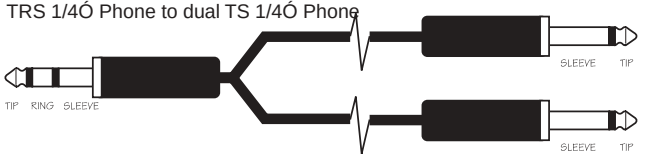
TS (Unbalanced) 1/4Ó Phone to XLR/M Cable

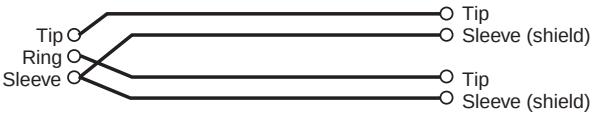
XLR/M to RCA (phono) Cable

TS (Unbalanced) 1/4Ó Phone to RCA (phono) Cable

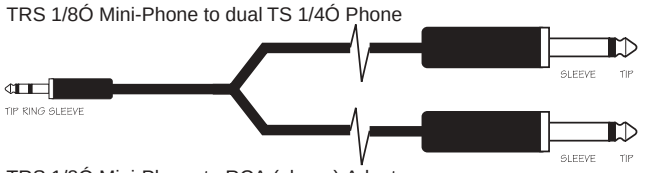


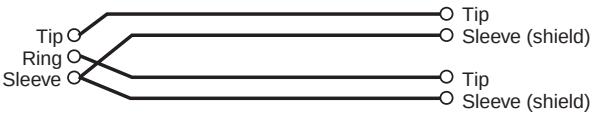

TRS 1/4Ó Phone to dual TS 1/4Ó Phone



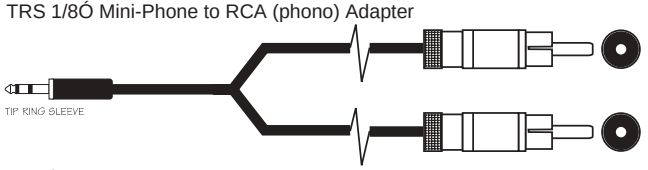



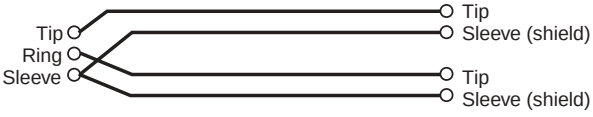

TRS 1/8Ó Mini-Phone to dual TS 1/4Ó Phone



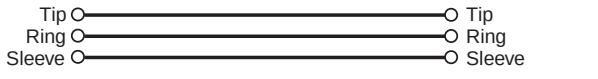

TRS 1/8Ó Mini-Phone to RCA (phono) Adapter




1/4Ó Phone to RCA (phono) Adapter

TRS 1/4Ó Phone to 1/8Ó Mini-Phone Adapter



EON® G2

GENERATION 2

# EONSUB-G2 User Guide

JBL PROFESSIONAL

Part Number: 981-00059-01

# About the EON SUB G2

## Applications

To supplement or extend the low frequency output of powered and non-powered full-range speaker systems.

## Features

- 15” Differential Drive™ low-frequency driver with dual neodymium magnet for high power handling, efficiency, and light weight.
- 250 watts actual power delivered to the drivers.
- Balanced loop-through output.
- Thermomaster™ Total Thermal Management System®. A single piece, cast-aluminum baffle integrates the woofer frame, horn, and amplifier heat-sink. Air movement in the finned ports dissipates heat – no internal or external cooling fans are required.
- Rugged, light weight, black co-polymer enclosure with cast aluminum baffle.
- Integral 35 mm pole mount receptacle with securing thumb screw.
- Extended low-frequency performance. Delivers powerful bass down to 40 Hz.

## Technical Specifications

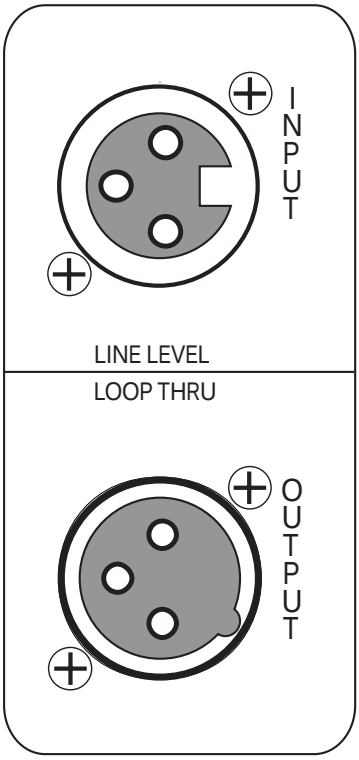
| | |
|---|---|
| Freq. Range (-10 dB) | 40 Hz – 200 Hz |
| Crossover Freq. | 125 Hz |
| Maximum SPL | 117 dB, @ 1 m (3.3 ft) |
| Dimensions (H x W x D) | 686 mm x 430 mm x 444 mm (27 in x 17 in x 17.5 in.) |
| Net Weight | 19.5 kg (43 lbs.) |
| Driver | Integral frame with one 15” (380 mm) driver, dual neodymium magnet, 2” differential drive voice coil. |
| **Electronic** | |
| Amplifier Rated Power | 250 watts @ 2ohms, 0.1% THD |
| Input Type | Balanced, differential |
| Maximum Input Level | |
| Line Level In | +28 dBu |
| Speaker Level In | 120 VRMS, speaker level |
| Input Impedance | |
| Line Level In | 16 ohms line level |
| Speaker Level In | 143 ohms speaker level |
| Audio Connectors | |
| Line Level In | XLR/F, balanced, line level |
| Speaker Level In | 1/4” Phone, speaker level |
| Loop Output | XLR/M, balanced, line level |
| Low Pass Filter | 125 Hz Active, 3-pole |
| AC Input | 110 – 230 VAC, selectable, 50 – 60 Hz, 203 watts rating per UL, detachable IEC power cable. |

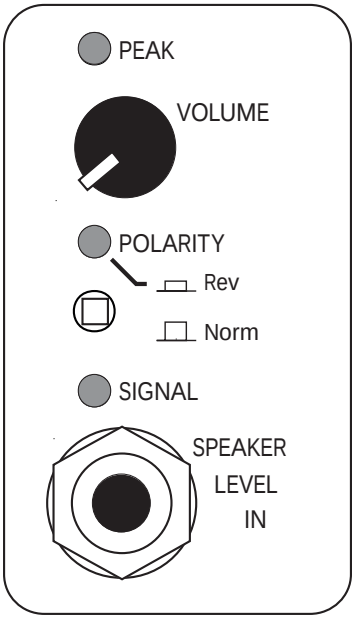
## Available Accessories

| | |
|---|---|
| SS2-BK | Tripod Stand |
| ESK15 | Suspension Kit for EON 15” models (except EON1500) |
| BRK15 | Bracket, adapts EON 15” models to OmniMount® brackets |
| EON15 BAG-1 | Zippered, plush-lined speaker bag with wheels for EON15” models |
| EON15 BAG/W-1 | Zippered, plush-lined speaker bag for EON15” models |

## Controls and Connections

The audio section of the EON Sub G2 includes powerful features that enhance the flexibility of your subwoofer.




### Connectors

LINE LEVEL INPUT

This balanced input accepts a standard XLR (female) connector. The LINE LEVEL INPUT is where the line level output of the audio mixer will be connected.

LOOP THRU OUTPUT

This XLR (male) connector is in parallel with the LINE LEVEL input and provides a convenient way to loop the audio signal from your mixer into additional EON Subs or your powered mid / high speakers.

SPEAKER LEVEL INPUT

This 1/4” phone jack accepts the high level output from a power amplifier or powered mixer. The SPEAKER LEVEL INPUT is the easiest way to add the EON Sub G2 to an existing system using a powered mixer or external amplifier to drive mid / high speakers. See “EON Sub G2 with Powered Mixer and Passive Mid / High System” for more details.

### Switches and Controls

POLARITY

The performance of a subwoofer depends on how it interacts with the mid/high speaker system. Depending on characteristics of the mid/high system and the relative position of the subwoofer, changing this switch may improve system performance. Depress this switch to reverse the polarity of the subwoofer.

VOLUME

The VOLUME control adjusts the input sensitivity of the EON Sub G2.

### Indicators

PEAK

This red LED illuminates to indicate that the amplifier output is approaching clipping.

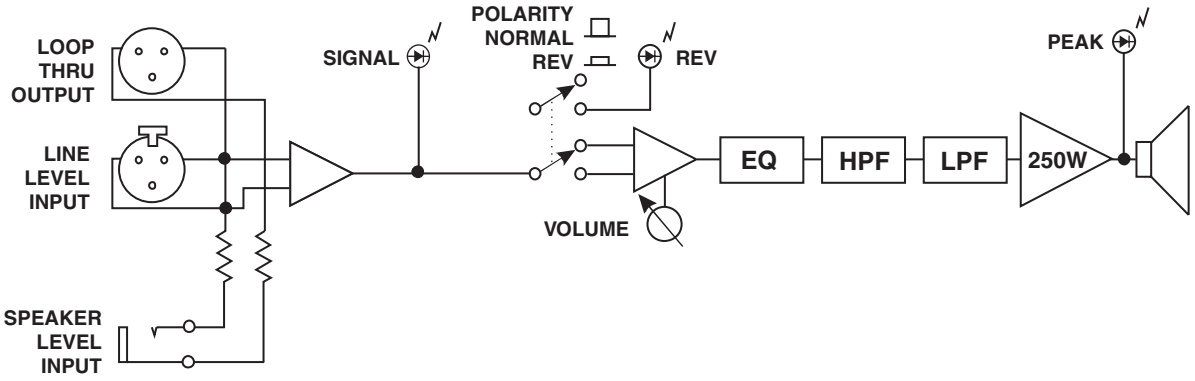
POLARITY REV

This LED illuminates to indicate that the subwoofer is operating with reversed polarity. This means that a positive voltage on pin 2 of the LINE LEVEL INPUT will cause the speaker cone to move inward/backward.

SIGNAL

The SIGNAL LED illuminates to indicate that an audio signal is present at the LINE LEVEL INPUT or the SPEAKER LEVEL INPUT.

## Block Diagram




## About Subwoofers

Here are a few bass basics. The ear is far less sensitive to very low frequencies than it is to mid-range frequencies. A 1,000 Hz sound at 95 dB SPL may seem obnoxious and painful to the ear while 50 Hz. at 95 dB SPL will seem pleasantly powerful. Musicians, composers, and producers know this instinctively and create music that contains a great deal of energy below 100 Hz. In order to properly produce or reproduce this music, an audio system needs to be capable of delivering much more acoustic output at low frequencies than in the mid band. Note that the capability of delivering more output should not be confused with the characteristic of low-frequency equalization boost. A system that is equalized to be perfectly flat may require as much as 20 dB more maximum SPL capability in the low bass. This is because the requirement for the extra energy is already built into the music. And contemporary dance music may rely even more on low frequencies for its power and energy.

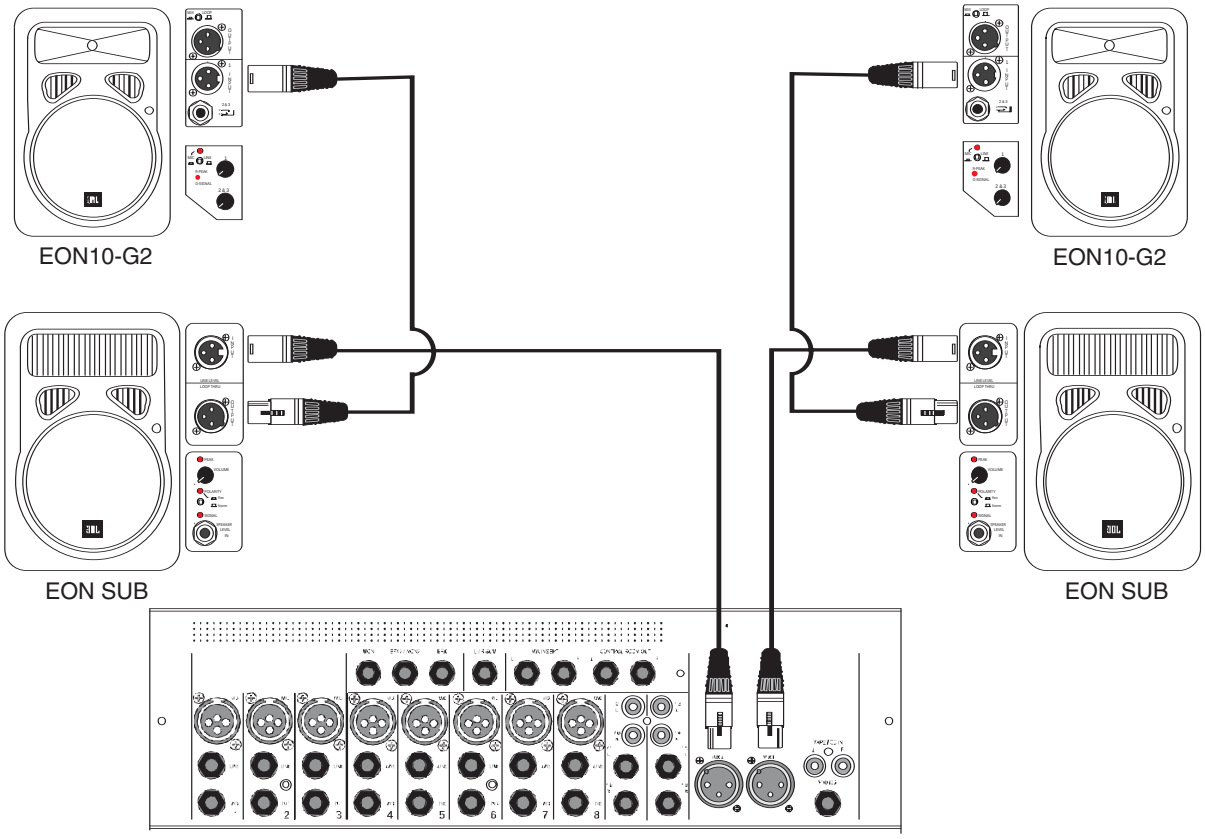
To meet this need, speaker designers developed specialized speakers called subwoofers. Subwoofers are intended to work below 150 Hz. In fact, most subwoofers will sound downright bad if you try to use them to reproduce sound above 200 Hz. There are even sub-species of subwoofers. Some subwoofers are designed for extreme low–frequency extension and will go down as low as 20 Hz. This type of performance is usually more useful for cinema effects than for music. A sub that goes down this low will be very large and probably require a lot of amplifier power. Another variety of subwoofer that may be more appropriate and practical for portable music applications concentrates on delivering “punch”. Punch is what you experience when the kick drum hits you in the chest. Much of what we think of as punch is in the 80 Hz. region.

Until recently, adding a subwoofer to a system was a complicated matter that required external crossover networks, extra power amplifiers, and of course the subwoofer itself. The EON Sub G2 simplifies this task by combining all this into a single, simple and light weight system.

## Application Examples

### Stereo System With EON Mid / High System with EON Sub G2s

This is a system in which a pair of EON Subs are used with a pair of EON 2-way powered speakers.



## Mono Subwoofer

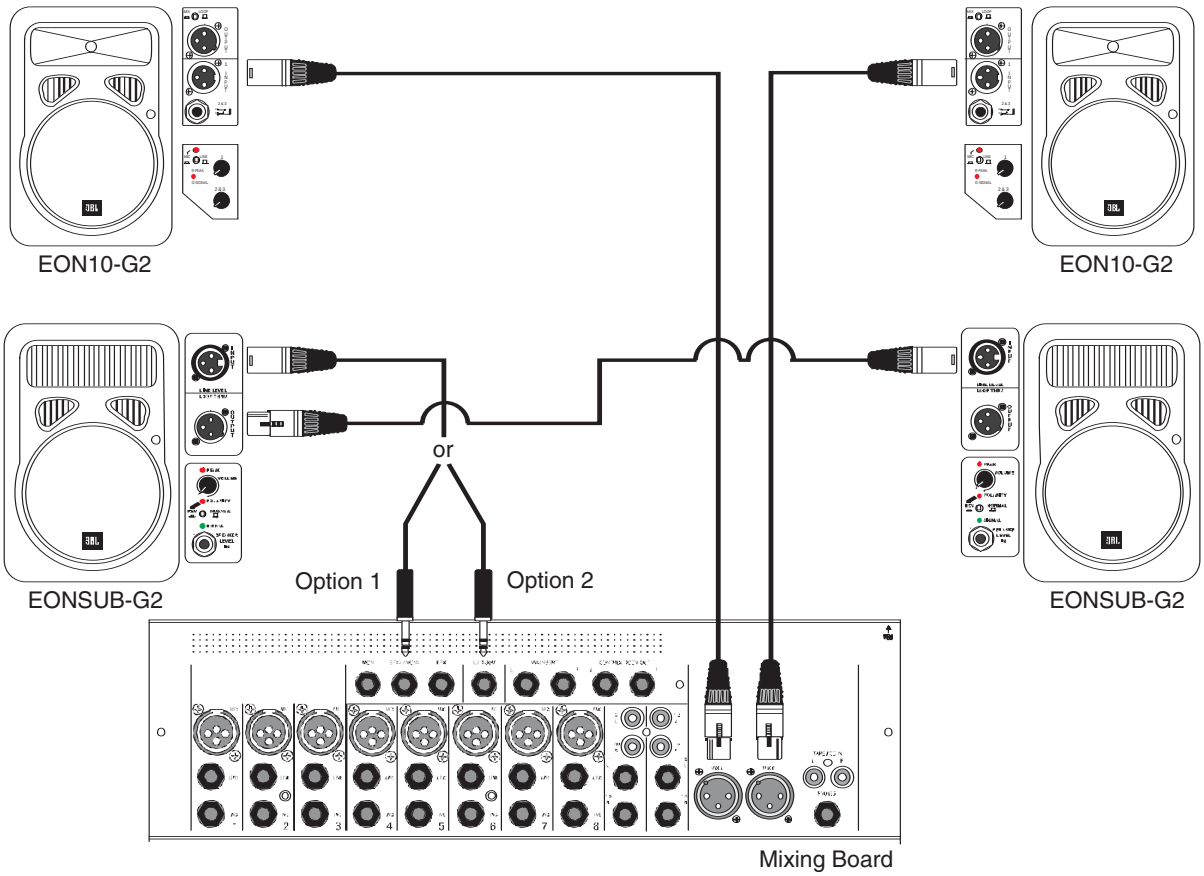
Here's a slightly more advanced set-up in which the subwoofers are not driven from the same mixer output as the 2-way main speakers. Using the subwoofers in mono will not degrade the stereo image because the ear does not do a good job of determining the source location of low frequency sound. The illustration shows two ways of using EON subs in mono. While two subwoofers are shown, you can also use this technique with a single subwoofer.

### Driving the Subs from a Mono Output

Many mixers have a mono output that sums the left and right mix. The advantage of using this output to drive your subwoofers is that you will have separate control over subwoofer volume from the mixing console. This allows you to easily vary the balance between subwoofers and mid/high speakers.

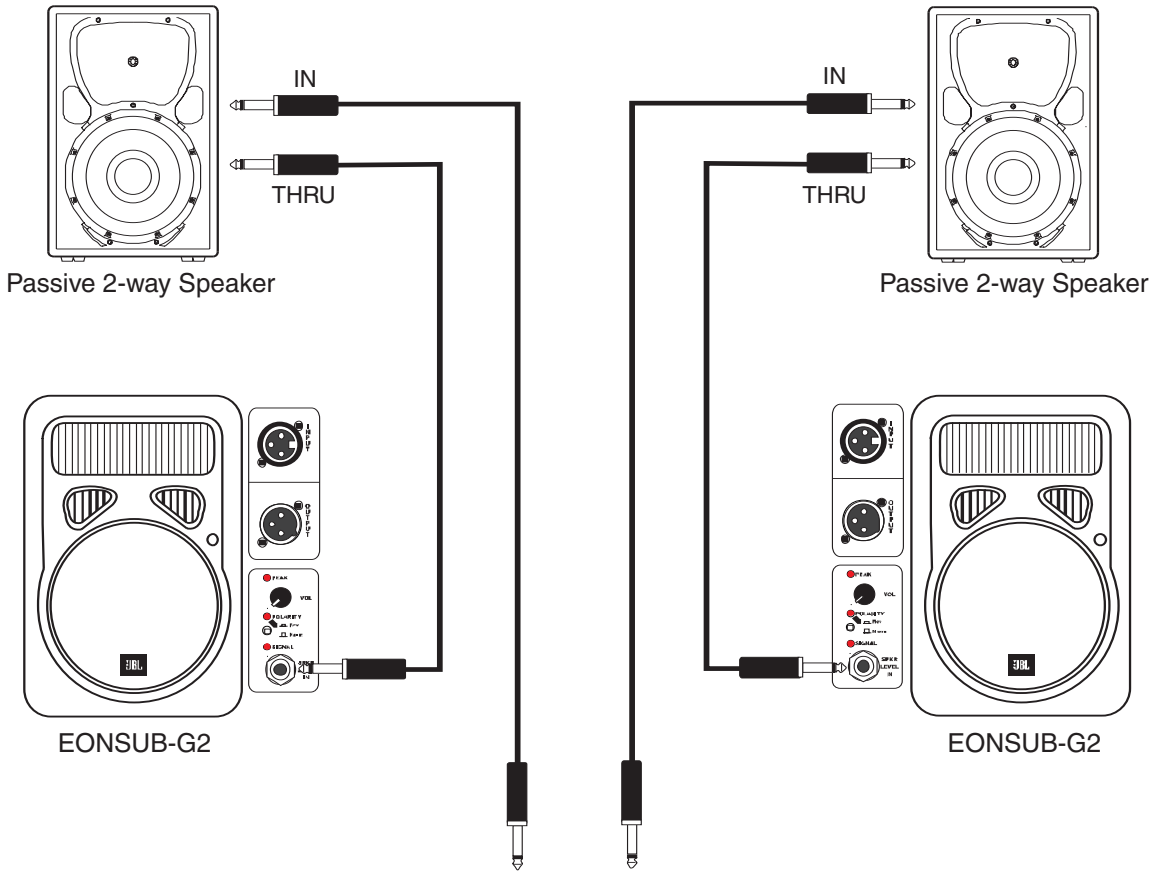
### Driving the Subs from an Auxiliary Output

Many professional engineers will create a separate mix for subwoofers from the Auxiliary buss of the mixer. This technique can improve low-frequency system performance in a number of ways. The system operator has independent control of the overall balance between subs and mid/highs and more flexibility in adjusting the blend of low frequency instruments. Let's say that you want to hear more lows from a bass guitar but don't want to hear more overall bass guitar. This method allows you to bring up the bass guitar in the subs without effecting the main mix.
Wind noise, handling noise, and bleed through of instrument amplifiers in a vocal mike can degrade the low-frequency sound. By using this technique, sources such as vocal mikes that don't have desirable low-frequency content can be kept out of the subs. Send only the instruments (kick drum, bass guitar, etc.) that actually have low-frequencies to your subs.



## Powered Sub with Passive Mid / High

The SPEAKER LEVEL INPUT on your EON Sub G2 provides a simple and convenient way to add subwoofers to a system with passive 2-way speakers.



## Voltage Selection And Fuses

### Changing Voltage

Your EON Sub G2 will typically be set at the factory to accommodate the power mains voltage in your area. Before you set up your EON Sub G2 for the first time it is a good idea to verify that the setting of the selector is appropriate for the power in your area. Directly below the IEC power connector you will see a seal that indicates the factory setting for the voltage. If the voltage indicated is correct for your area, go ahead and power up your EON Sub G2.

In the event that you do need to change the voltage:
- Make sure that the AC is disconnected from the speaker.
- Directly below the male IEC connector on the speaker is a voltage selector. Break the factory-applied seal.
- Set the voltage selector switch to the 115V or 230V setting as required for your area.
- After having reconfirmed that the correct voltage is selected, connect the AC (IEC connector) and power the unit up.

DO NOT UNDER ANY CIRCUMSTANCES OPERATE THE UNIT WITH THE WRONG VOLTAGE SELECTED. DOING SO MAY RESULT IN SERIOUS DAMAGE TO YOUR SPEAKER SYSTEM WHICH WILL NOT BE COVERED BY WARRANTY.

### Fuse Replacement

The EON Sub G2 has no user-serviceable fuses. Failure of fuses is most frequently a symptom of problems requiring service by a competent technician.

## Troubleshooting

| Symptom | Likely Cause | What to do |
|---|---|---|
| No sound | Speaker not connected to active AC power. | Verify that speaker is connected and that the circuit is on. |
| | Power not switched on. | Switch on power and verify that power LED is on. |
| No sound, speaker is connected to working AC power but won't come on. | Speaker power cable is faulty or improperly connected. | • Re-seat the power cable at both ends.<br>• Substitute a known-good power cable. |
| | Blown fuse. | • There are no user-serviceable fuses in the EON SUB G2. Take your speaker to a competent servicer. |
| No sound. Speaker comes on. SIGNAL LED does not illuminate. | Signal source (mixer, instrument, etc.) is not sending. | • Check VU meters on the source mixer.<br>• Verify that the tape or CD is playing.<br>• Use headphones to verify that the instrument is actually sending an audio signal. |
| | Faulty cables and connections. | • Disconnect and re-seat signal cables.<br>• Replace suspected cable with a known-good cable. |
| Signal sounds distorted and very loud, PEAK light is lit most of the time. | Excessive input signal, trying to exceed the capabilities of the speakers. | • Reduce the output level of the source.<br>• Turn down the LEVEL controls on the speaker.<br>• Use additional EON speakers. |

| | | |
|---|---|---|
| Signal sounds distorted even at moderate volumes, PEAK light is not lit. | Mixer or other source is overdriven | Review the Owner's Manual for your mixer and adjust controls as needed<br>• Input sensitivity (gain)<br>• Channel faders<br>• Master faders |
| Hum or Buzz that increases or decreases when the mixer level controls are moved. | Improper A/C ground or faulty equipment connected to mixer input | Disconnect or mute channels one at a time to isolate the problem. Refer to the owner's manual of the faulty equipment for troubleshooting help. |
| | Faulty cable between source equipment and mixer | Substitute a known-good cable for the suspected faulty cable. |
| Hum or Buzz | Improper A/C grounding, ground loops | • Connect all speakers to a common power circuit.<br>• "Telescope" the audio ground by using an XLR/F to XLR/M adapter with Pin1 disconnected on one end.<br>• Re-route audio cables away from AC power and lighting cables. |
| | Excessively long unbalanced cable run | • Use the balanced outputs (if available) of your mixer or source equipment to drive your EON speakers.<br>• Use a "DI" (direct injection) box to convert your unbalanced equipment output to a balanced output. |
| | Improper system gain structure | Reduce the INPUT 1, LINE 2, and LINE 3 controls and increase the output level of your source devices. |
| Speakers feedback and howl when the microphone volume is turned up | Microphones are pointed into the speakers | Move the speakers so they do not point into the microphone's pick-up pattern. |
| | Equalizer settings are incorrect | Locate the feedback fre quency and reduce it using the mixer EQ or an external equalizer. |
| | Excessive gain | Reduce the gain at the mixer and move the microphone closer to the sound source. |